

# The Afghanistan Agrometeorological Monthly Bulletin



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**Wheat Crop Condition**



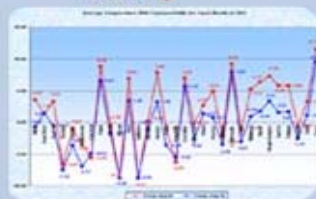
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**Comparison of NDVI**



**Afghanistan Snow Depth**

The Agromet Project of USGS, supported by the US Agency for International Development (USAID), is working together with the Ministry of Agriculture and Irrigation and the Afghan Meteorological Authority (AMA) of Ministry of Transport (MoT).

**Agromet Network**



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## Summary

In most parts of Eastern Region the crops are in normal condition as in Asmar District and Center of Kunar Province and Nangarhar Province. Reports are saying from Center of Laghman Province that the crops are in the good condition (better than normal).

**Zarang with 36.4 ° C was the warmest part of the country, Ghazni and Jaghatoo with – 19.6° C experienced extreme cold compared to other regions of the country.**

During the month of March 2007 the main adverse factors in North Eastern region were lack of agricultural input and heavy rain.

**Comparison of snow extent for the month of March 2007 with the same month of long term average shows decrease of snow extent during the month of March 2007 over the same month of long term average in most parts of the snow coverage areas.**

## Crop Phenological Stages

### Central Region:

In some parts of this Region the crops are in vegetative stage as in Seya Gerd District of Parwan Province, Karizmire and Sarobi Districts of Kabul Province, Logar Province, and Dashtak District of Panjsher Province. Reports from Dara District of Panjshir Province are showing that crops are in the emergence stage. In Paghman District of Kabul Province and in Geghatoo District of Wardak Province soil preparation for seeding is underway and in other areas within the two provinces seeding has taken place.

### East Central Region:

In central Bamyan Province, and Panjab and Sheber Districts of Bamyan crops are in the emergence stage. In Yakawlang District of Bamyan Province the winter wheat is in dormancy stage covered by snow but the spring wheat is in planting stage in some areas of this region.

### North East Region:

In most parts of this region the crops are in vegetative stage as in Imam Sahib, Chahardara, Aqtipa, Qala –e- Zal Districts and center of Kunduz Province and Baghlan Province. From Bangi District and center of Takhar Province reports are showing that the crops are in the emergence stage.

### North Region:

Reports from this region are indicating that crops are in the different stages. In Sozma Qala District of Saripul Province, crops are in the emergence stage. In central Saripul and Faryab Provinces, Nahershahi and Dehdadi Districts of Balkh Province and central Shaberghani of Jawzjan Province crops are in vegetative stage.

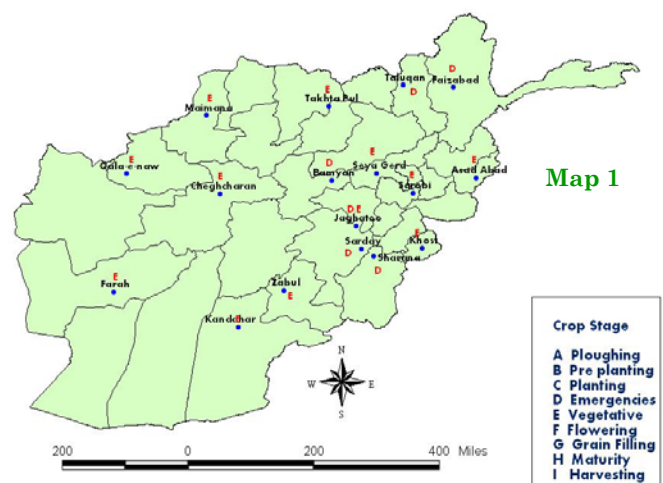
### Southern Region:

From Nadi Ali, Nawa and Garashk Districts and central Helmand Province and Urozgan Province crops are in vegetative stage. From Zabul and Kandahar Provinces reports are saying that the winter wheat is in the vegetative stage but the spring wheat is in the planting stage. Crops in Sardy and Maqour Districts of Ghazni Province are in emergence stage (height is less than 10 cm).

### Western Region:

In Ghor Province and Qala-e-Naw center of Badghis Province crops are vegetative stage (plant height is more than 10 cm). Reports from Maqur District of Badghis Province are indicating that winter wheat is in vegetative stage but spring wheat is ready for cultivation.

### Wheat Crop Stage March — 2007





## Crop Phenological Stages

### Eastern Region:

In most parts of this region the winter crops are in the vegetative stage as in Mehtharlam Center of Laghman Province and Jalalabad Center of Nangarhar Province and the spring wheat is in the planting stage. From Asmar District of Kunar Province and Asadabad Center of Kunar Province reports are saying that the crops are in the vegetative stage.

### South Eastern Region:

Crops are ranging from emergence to vegetative stage as in Urgon, Khairkot and center of Paktika Province, and Gardiz and Tera Districts of Paktya Province. Reports from central Khost Province showing that winter wheat is in vegetative stage, but spring wheat is in planting stage.

## Crop Condition

### Central Region:

In most parts of this region crops are in normal condition as in Chak and Jaghatoo Districts of Wardak Province, Seya Gerd District of Parwan Province, Mahmood Raqee center of Kapisa Province, and Dara District of Panjshir Province. In Dashtak District of Panjsher Province and central Parwan Province crops are in good condition (crop condition is better than normal).

### Eastern Region:

In most parts of Eastern Region crops are in normal condition as in Asmar District and central Kunar and Nangarhar Provinces. Reports from central Laghman Province indicate that crops are showing better than normal condition.

### North Eastern Region:

In most parts of the North Eastern Region, crops are showing normal condition as in Bangi District and central Takhar Province, Baghlan Province, Imam Sahib, Chardara, Aqtipa Districts of Kunduz Province, and Faizabad District of Badakhshan Province.

### Northern Region:

In most parts of this region crops are showing normal condition as in central Shaberghon of Jawzjan Province, Nahrshahi and Dehdadi Districts of Balkh Province, Sozmaqala District and central Saripul Province and Samagan Province.

### Southern Region:

In this region crops are in normal condition as in Nad Ali, Nawa and Gareshk Districts of Helmand Province, Moquar and Sardy Districts of Ghazni Province, Center of Kandahar Province, Nimroz Province and Zabul Province.

### Western Region:

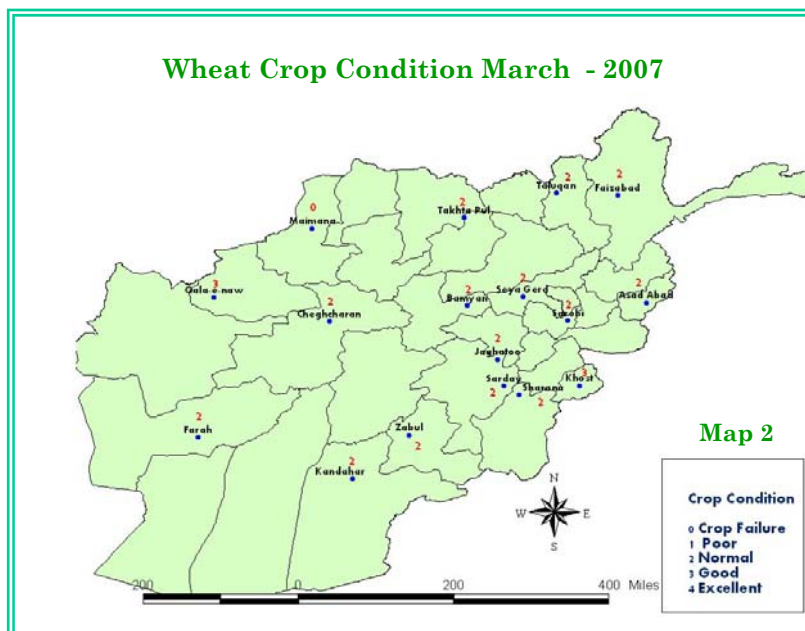
Reports from Maqure District of Badghis Province and Ghor and Farah Provinces are indicating normal crop condition.

### East Central Region:

From this region reports are indicating normal crop condition as in Yakawlang and Shiber Districts and central Bamyan Province. In Panjab District crops are reported in poor condition (crops are below normal condition at District level).

### South Eastern Region

Repots from Khairkot, Urgon and central Sharana Districts of Paktika Province indicate normal crop condition. Central Gardiz of Paktya and central Khost Provinces are reporting better than normal crop condition.



## Adverse Factors

### Central Region

During the month of March 2007 the main adverse factors were heavy floods occurred in Parwan, Logar, Wardadak, and Kabul Provinces which has destroyed more than 4000 hectors of agricultural land and more than 8000 of fruit and non fruit trees. Shortage of inputs and too much weeds were the other adverse factors. In Dashtak and Dara Districts of Panjshir Province reported heavy rain and snow avalanche, which resulted in destroying about 40 Jerib of agricultural land. In Kapisa Province main adverse factors were late planting and heavy rainfall.

### East Central Region:

Main adverse factors were heavy snow as reported in Qaryah-e Sabz Village of Bamyan Province where about 650 fruit trees were lost due to snow sliding. In Panjab and Yakawlang Districts and central Bamyan Province, lack of agricultural inputs was reported.

### North Eastern Region:

During the month of March 2007 the main adverse factors reported in this region were lack of agricultural inputs and heavy rain. Reports from Takhar Province are indicating pest and diseases have been observed in the area. Too much weeds and late planting are the other adverse factors in Baghlan Province.

### Northern Region:

In this region the main adverse factors were shortage of agricultural inputs, pest, diseases and late planting. In Faryab Province flood has destroyed about 300 Jerib of agricultural land and 221 animals have been killed. In Balkh District of Saripul Province heavy floods have destroyed 420 Jerib of agricultural land.

### Southern Region:

In this region the main adverse factors were too much rain, too much weeds and shortage of agricultural inputs, as reported from Zabul and Kandahar Provinces. In Sarday and Maqur Districts of Ghazni Province the adverse factors were heavy rain and late planting. In Nimroze Province heavy floods have destroyed 20000 Jerib of agricultural land and 12 water pumps were out of function. In Dehrawad and Chaharchina Districts of Urozgan Province reports are indicating that heavy floods have destroyed about 20500 Jerib of agricultural land and 2080 animals were killed.

### Western Region:

In this region the main adverse factors were lack of agricultural inputs, late planting and snow sliding which have destroyed cropped land as reported from Ghor Province. In Karkh, Engel and Zandajan Districts of Hirat Province flood has destroyed about 350 Jerib of agricultural land. Floods in Badghis Province destroyed about 150 Jerib of agricultural land, damaged 1020 fruit trees, and killed about 1000 animals.

### Eastern Region:

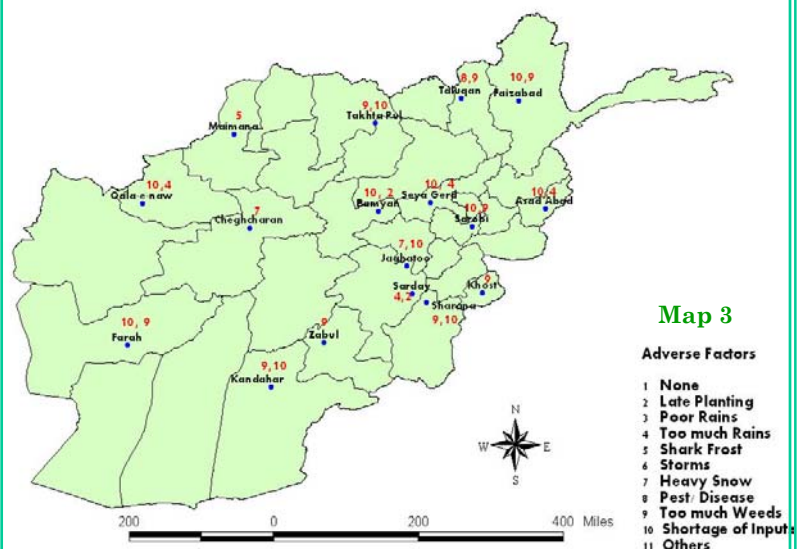
Central Mehterlam of Laghman Province reported heavy rain and shortage of agricultural inputs. Laghman and Kunar Provinces experienced heavy floods, which destroyed agricultural land and damaged fruit Orchards. Kunar and Nangarhar Provinces reported problems with too much weeds, pest and various crop diseases.

### South Eastern Region:

Heavy precipitation, pest and diseases, weeds and lack of agricultural inputs are the main adverse factors reported in many parts of this region as in Khairkot, Urgon and Sharana Districts of Paktika Province, Paktya and Khost Provinces.



Wheat Adverse Factors March - 2007



Map of the United Kingdom divided into regions, each with a color and a 'Flood' label. The regions are:

- North Eastern (Green)
- Eastern (Grey)
- Capital (Light Blue)
- South Eastern (Orange)
- Central Highland (Light Grey)
- Northern (Yellow)
- Western (Purple)
- Southern (Brown)

Legend:

- OTHER PESTS/DISEASE (Icon: A green caterpillar)
- GOOD RAINS (Icon: A blue cloud with rain)
- FROST (Icon: A blue cloud with snow)
- TOO MUCH WEEDS (Icon: A green plant with yellow flowers)



Flood FLOOD

## Map 4

## Rainfall Satiuation

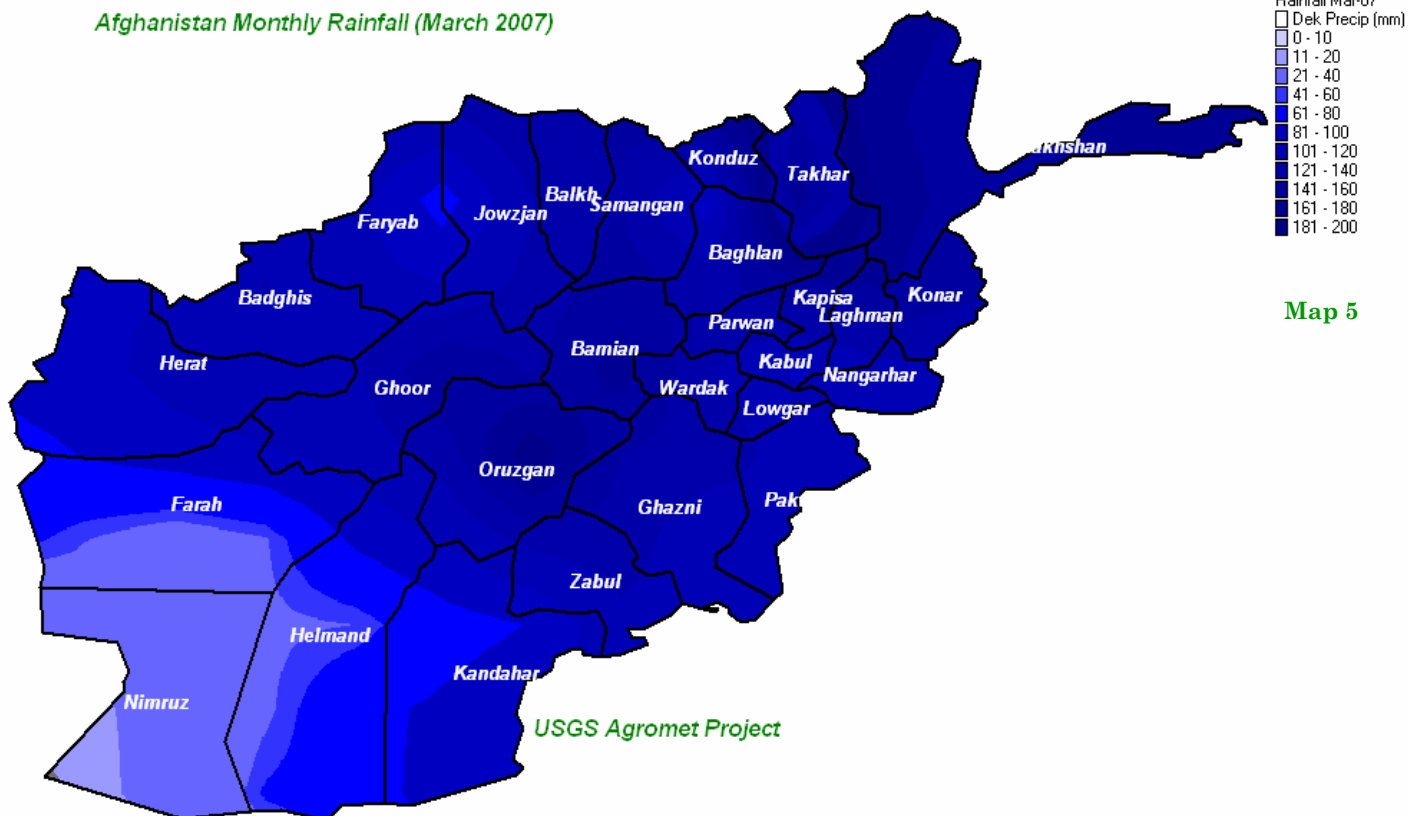
Rainfall for the month of March 2007 is significantly higher compared to the same month in 2006 in most parts of the country, except Faizabad, Farah, Kunduz and Kandahar where the cumulative observed rainfall was less than that over the same month in 2006 ( chart 1 ). The percentage +/- of rainfall through out the country is as follows:

Baghlan 115 %, Darul Aman 301 %, Faiz Abad – 7 %, Farah – 35 %, Gardiz 33 %, Ghazni 293 %, Ghaziabad 56 %, Herat 279 %, Jabul Seraj 115 %, Jalalabad 186 %, Kabul 31 %, Kandahar – 27 %, Kariz Mir 8 %, Kunduz 193 %, Logar 68 %, Maimana 70 %, Mazar 139 %, Paghman - 67 %, Sheberghan 90 %, Sarobi 59 %, Sari Pul, 237 %, and Taluqn 2 %.

For the month of March 2007, the over all amount of precipitation is higher than that compared to the same month of long term average, except in Faizabad, Farah, Paghman, Maimana, Taluqan and Sheberghan where the rainfall had decreased during the month of March 2007 compared to the same month of long term average. Chart (2) shows comparison between cumulative rainfall for the month of March 2007 and the same month of long term average across the country. The percentage +/- of rainfall is as follows:

Baghlan 14 %, Darul Aman 40 %, Faiz Abad - 14 %, Farah – 88 %, Gardiz - 3 %, Ghazni 7 %, Ghaziabad 70 %, Herat 67 %, Jabul Seraj 111 %, Jalalabad 20 %, Kabul 35 %, Kandahar 71 %, Kariz Mir 36 %, Kunduz 626 %, Logar 35 %, Maimana - 18 %, Mazar 18 %, Paghman - 59 %, Sheberghan - 7 %, Sarobi 152 %, Sari Pul 552 %, and Taluqan - 51 %.

Afghanistan Monthly Rainfall (March 2007)

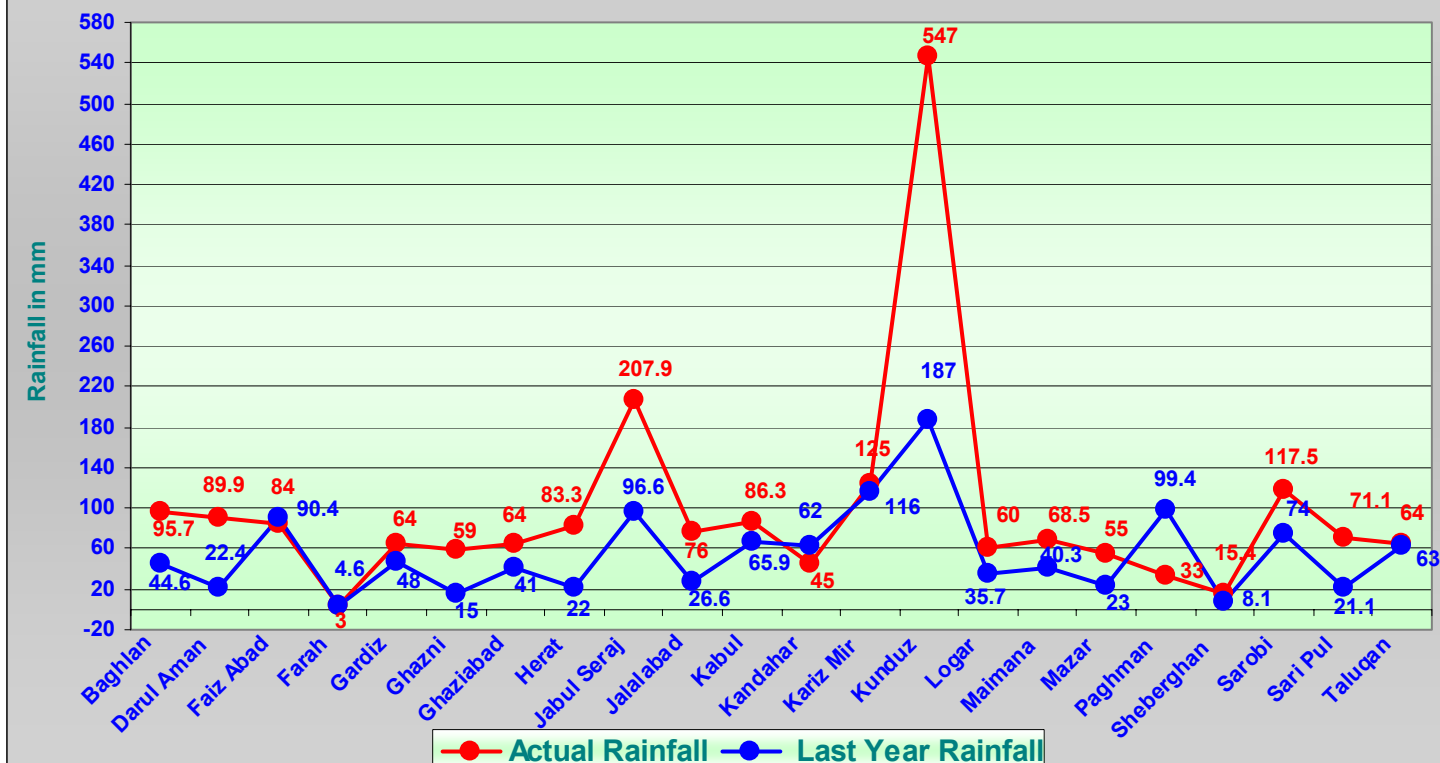


Distribution of rainfall varies in different regions of the country. Map 5 shows more rainfall occurred in various parts of the Southeastern region, particularly in Urazgan province. Some parts of the Southern and Western regions (Nimroz and Farah in particular) experienced less amount of rainfall than other regions during the month of March 2007.

## Rainfall Graphs for the Month of March 2007

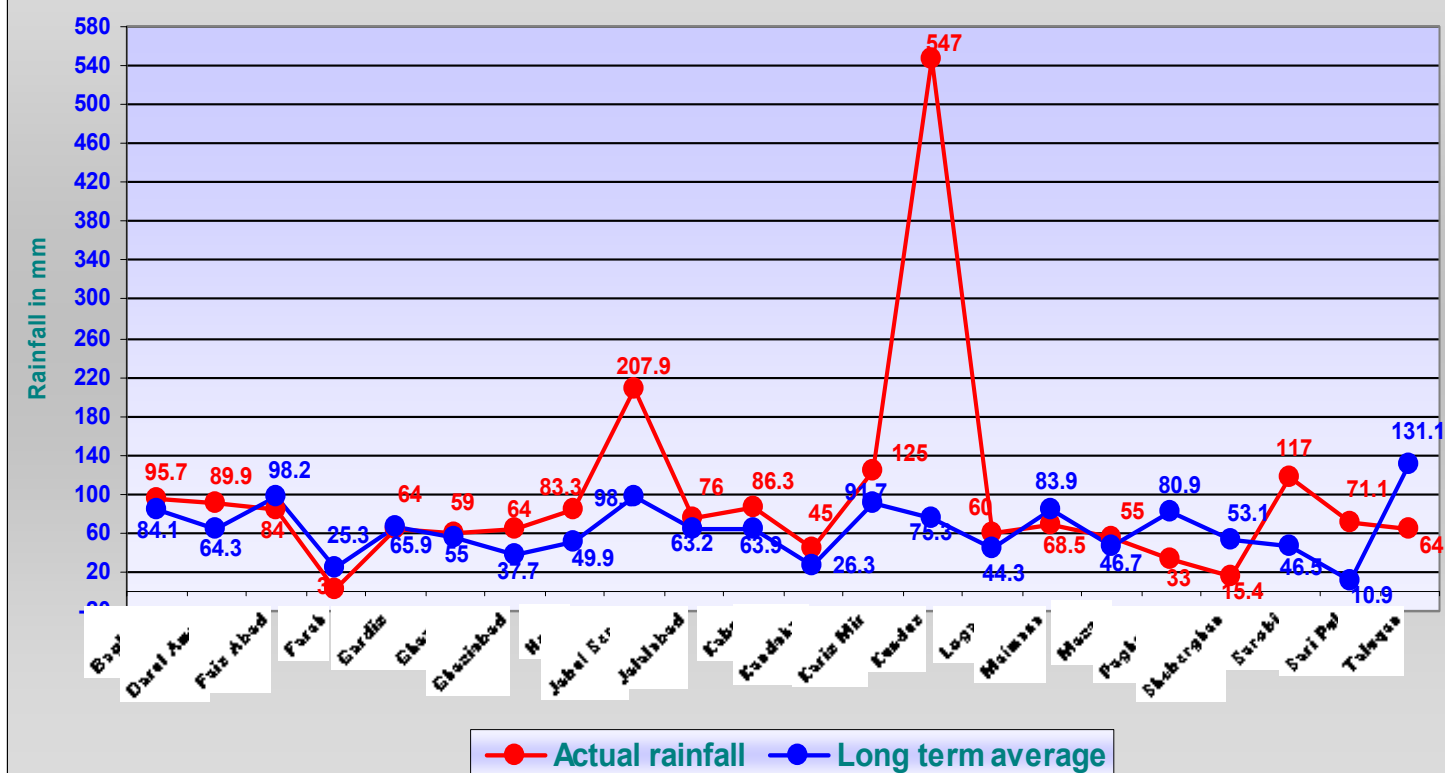
### Comparison of Actual and Last Year Monthly Rainfall (March 2007)

Chart 1



### Comparison of Actual and Long Term Average Accumulated Rainfall (March 2007)

Chart 2

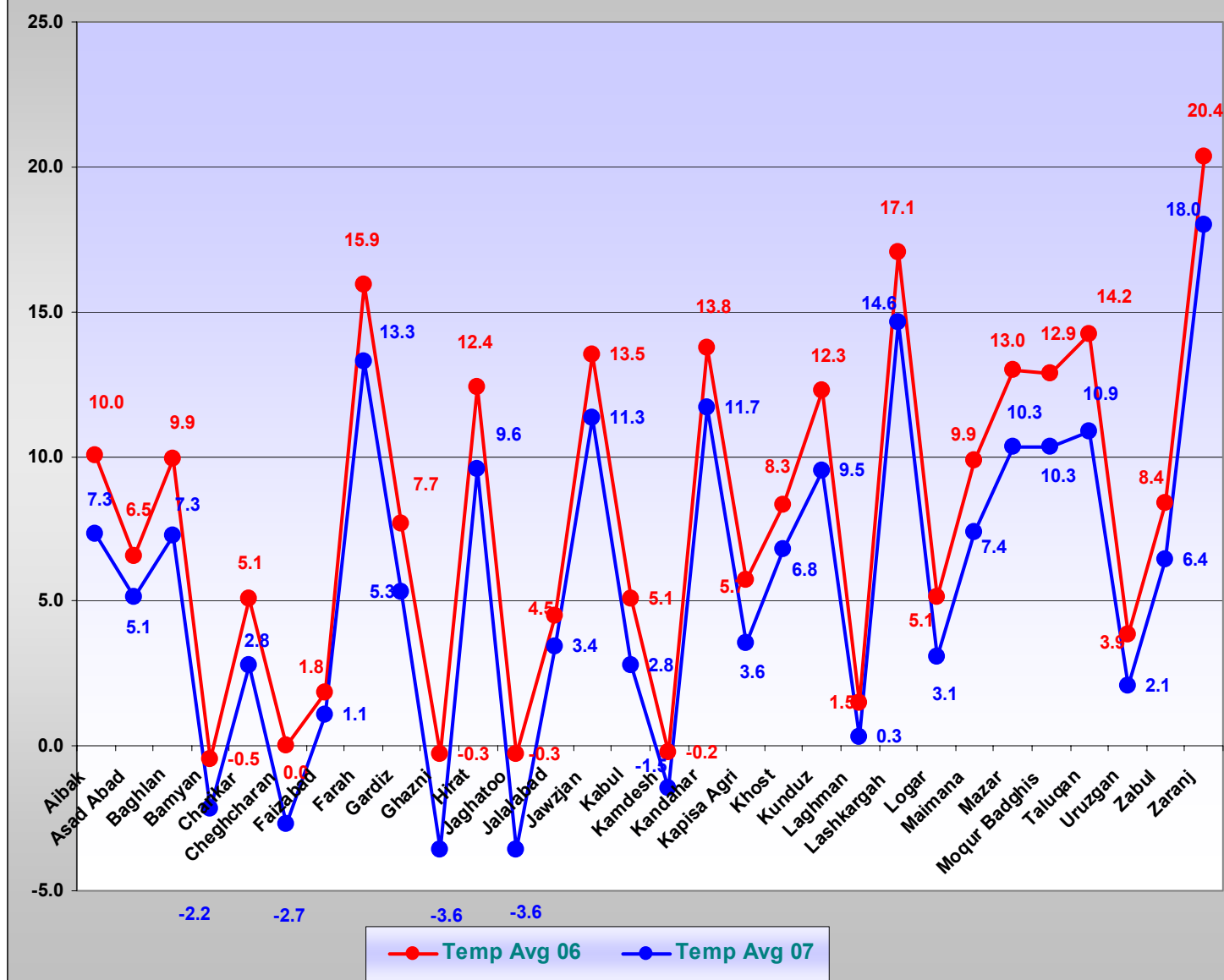




## Average Température for the Month of March 2007

Average Temperature 2007 Compared with the Same Month of 2006

Chart 3



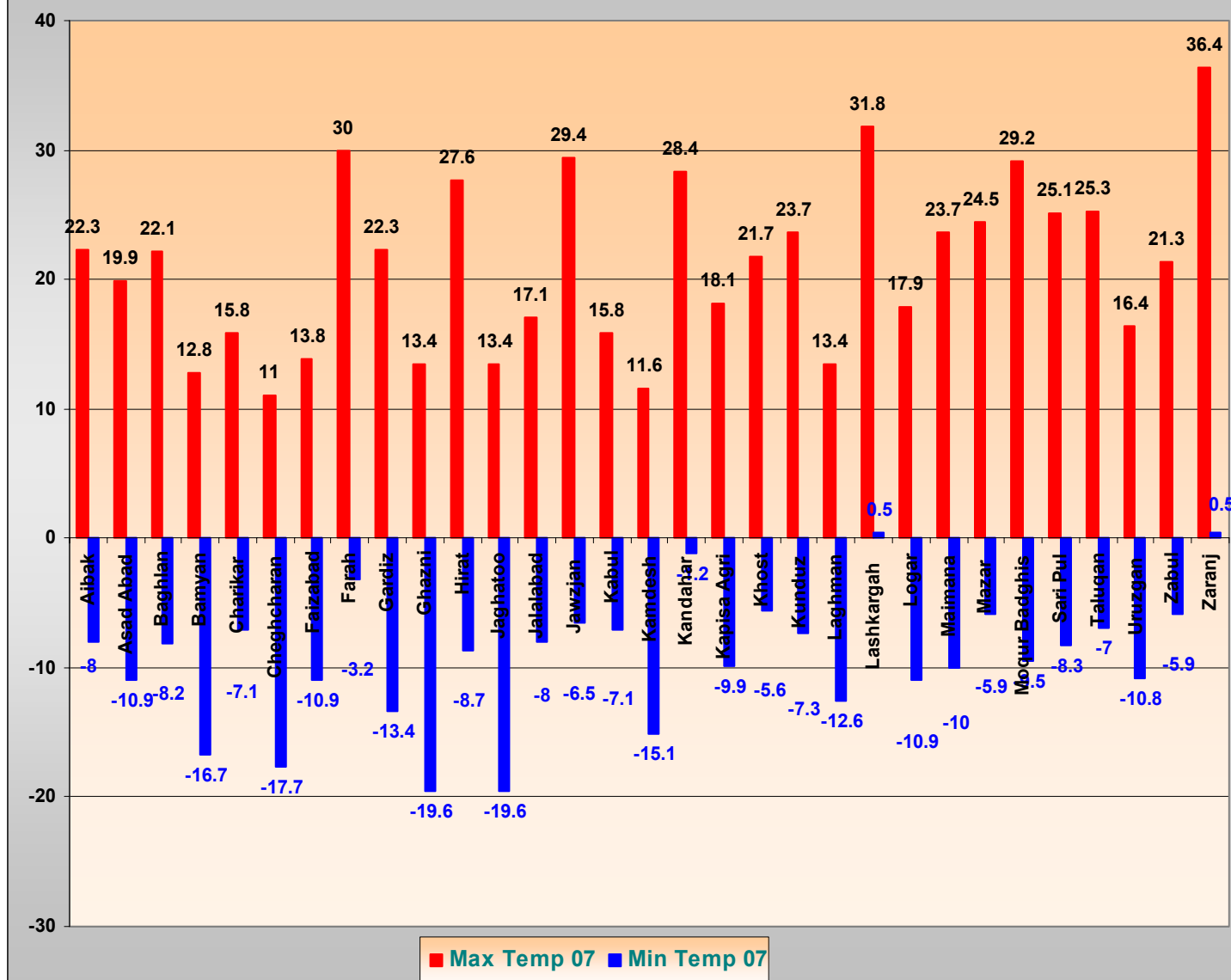
Temperature for the month of March 2007 had a decrease compared to the same month in 2006 across the country.

In general, lower temperatures were recorded for the month of March 2007 compared to the same month in 2006 across the country. Comparison of temperature values (Chart 3) clearly shows lower temperatures were observed during the month of March 2007 over the same month in 2006 through out the country. Temperature differences for the month of March 2007 compared to the same month in 2006 is 1 – 3 ° C across the country. Likely, lower temperatures during March 2007 compared to the same month in 2006 is due to increased precipitation in March 2007. Lower temperatures slowed rapid snow melt, a favorable condition for agriculture.

## Temperature for the Month of March 2007

Minimum and Maximum Temperature March 2007

Chart 4

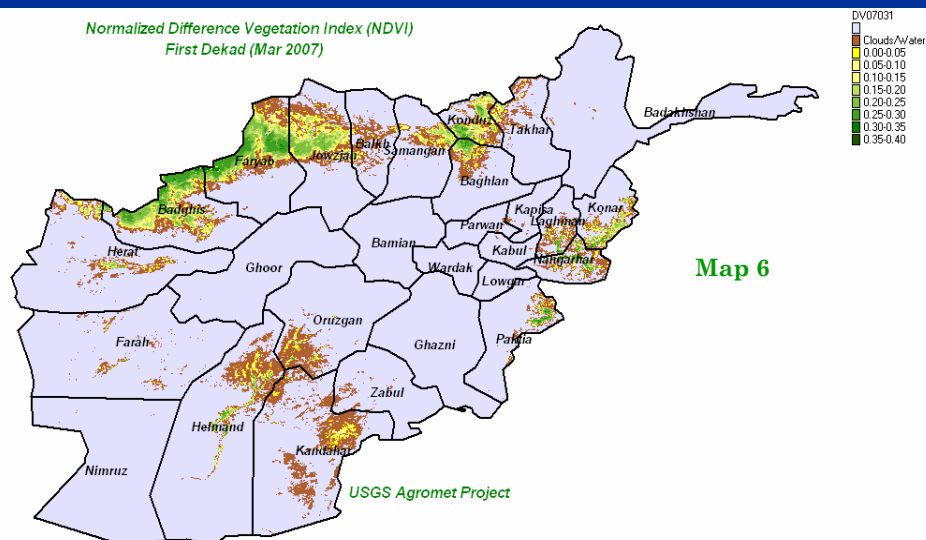


**Zarang with 36.4 ° C was the warmest part of the country**

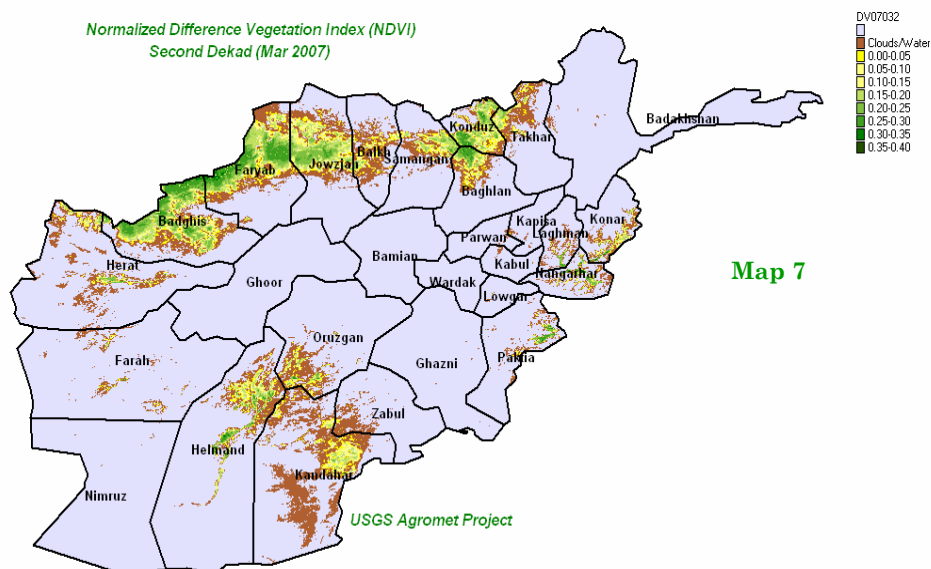
Chart 4 shows maximum and minimum temperature for the month of March 2007 where the maximum temperature was above freezing point across the country and the minimum temperature remained at freezing point except in Lashkargah of Helmand Province and Zaranj of Nimroz Province where the minimum temperature recorded above freezing point during the month of March 2007

Zarang of Nimroz Province with 36.4 ° C was the warmest spot in the country. Ghazni and Jaghatoo with – 19.6° C experienced extreme cold compared to other regions of the country. Extreme cold temperatures limited to some parts of Kabul, Central Highlands, Hindokush areas and Northeastern regions during the month of March 2007.

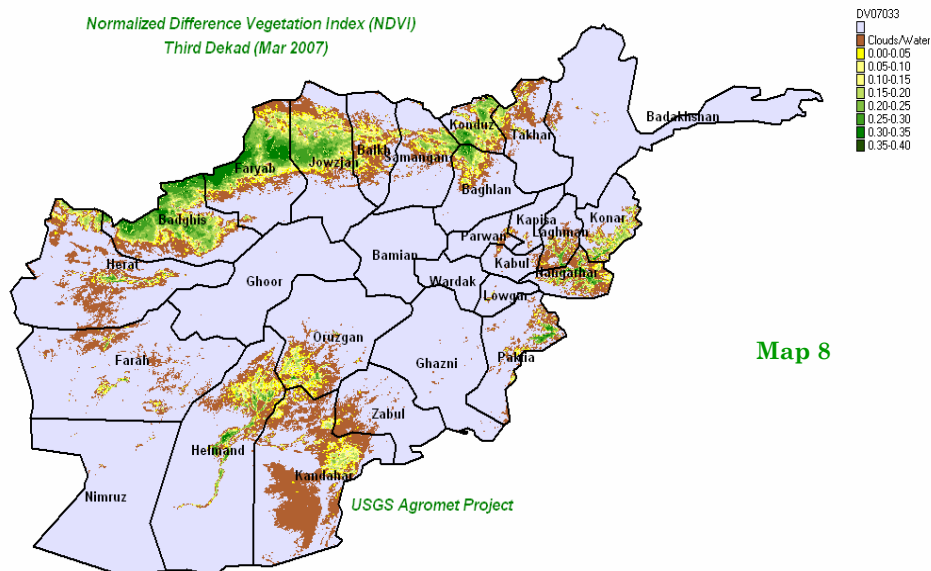
# Normalized Difference Vegetation Index (NDVI) (March 2007)



Vegetation Index (NDVI) 1st Dekad of March 2007—Afghanistan



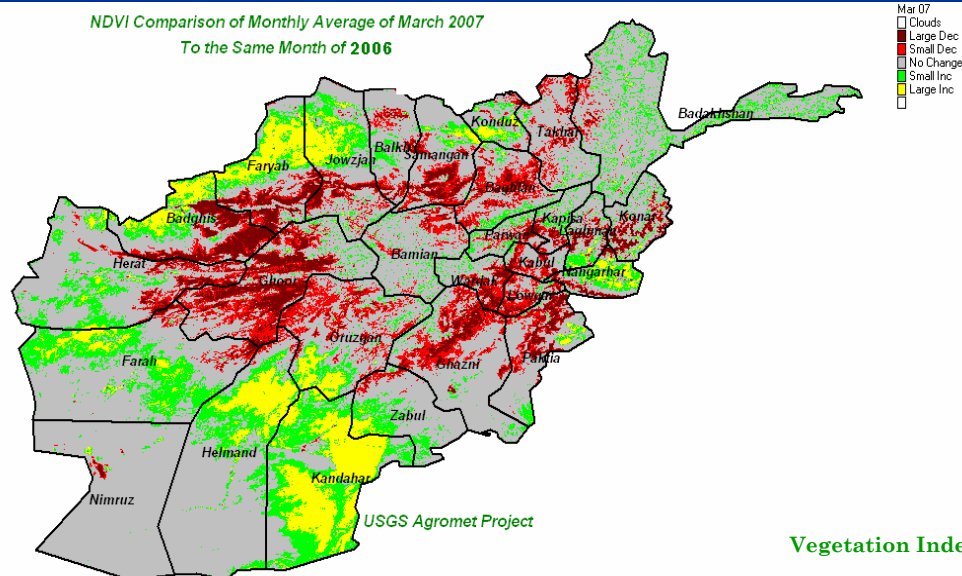
Vegetation Index (NDVI) 2nd Dekad of March 2007—Afghanistan



Vegetation Index (NDVI) 3rd Dekad of March 2007—Afghanistan

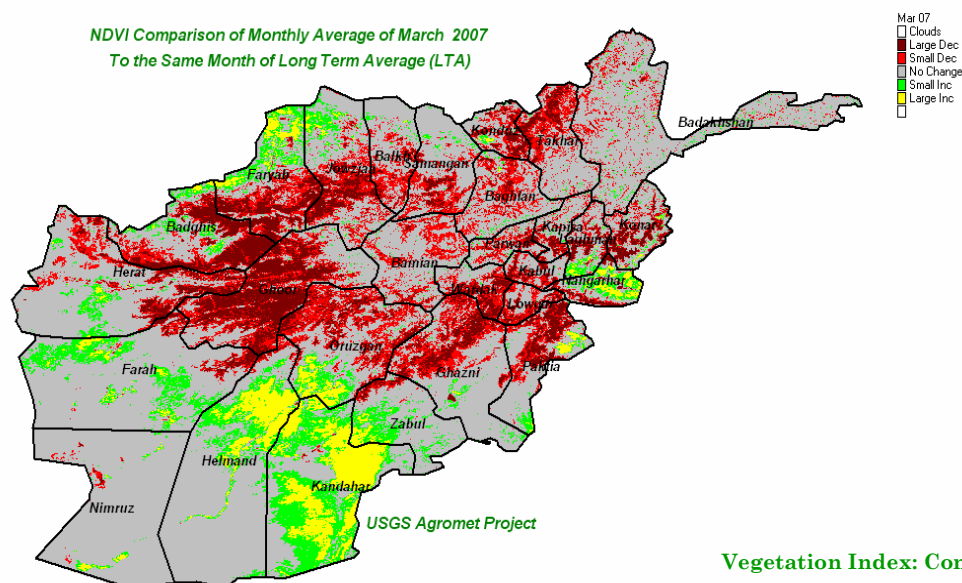
## Comparison of NDVI March 2007

NDVI Comparison of Monthly Average of March 2007  
To the Same Month of 2006



Vegetation Index: Comparison to Last Year

NDVI Comparison of Monthly Average of March 2007  
To the Same Month of Long Term Average (LTA)



Vegetation Index: Comparison to Long Term Average

### NDVI: March 2007

Comparison of monthly average of NDVI for the month of March 2007 with the same month in 2006 (map 9) shows large increase in NDVI values have occurred in most parts of the Southern region, some parts of the North flat areas, and limited areas in the Northeastern and Eastern region during the month of March 2007 over the same month in 2006. Comparisons also showed large decrease in NDVI values in some parts of the Northern, Northeastern, Capital, and Southeastern regions during the month of March 2007 over the same month in 2006. There is no change in NDVI values in the remaining regions in the country.

Comparison of NDVI monthly average for the month of March 2007 with the same month of long term average (map 10) shows large increase of NDVI in some parts of the Southern regions, limited areas in the Northern flat areas, and some parts of the Eastern region. Large decrease in NDVI was noticed in most parts of the western regions, Northern mountainous areas, North Eastern, Kabul, Central Highlands, and Southeastern regions during the month of March 2007 over the same month of long term average.



# Smut Disease

It is caused by fungus known in Latin Tilletia indica Mitra or partial Bunt of bread wheat, durum wheat. The disease is usually noticed only when the partly smutted and broken karnals are seen in threshed grain. Wheat grain containing more than 3% bunted karnal is generally considered unfit for human consumption.

## Discovery:

Smut which causes karnal Bunt was first discovered in 1930 near the town karnal in northwest India. Since then, it has been identified in all the major wheat producing regions of India, Iran, Nepal, Pakistan and Afghanistan. It has also been found in seed exported from Syria and Lebanon, and in the late 1960s it was introduced into Mexico. In the United States of America, the disease was first detected in 1996 in Arizona, and thereafter in Southern California and in Texas, where it has spread to additional areas in 2001. It was found in South Africa during December 2000 in the Herbert District near Douglas in the Northern Cape.



Loose smut symptoms on wheat spike.  
Courtesy Harold Kaufman, TAEX, 1996.

## Mode of Action:

*Tilletia indica* infects its hosts at flowering. It replaces part or all the seed with a spore mass that is identified as a black powder smelling like fish. This is made up of over-wintering propagules, or teliospores. During harvesting and threshing, the teliospores are released from the infected wheat grain to contaminate seed and soil, where they may remain dormant for years.

Teliospores germinate whenever conditions are suitable. Each one can produce a short structure known as promycelium, at the apex of which as many as 65-185 primary sporidia may form. Secondary sporidia are produced from the mycelium (fungal threads) or by budding from the primary sporidia. Sporidia can be water-borne or wind-borne and they infect the young wheat ears at the flowering stage of the host plant, for instance during wheat heading and floral development. Florets are infected directly through the young glumes and the ovary wall. This occurs when germ tube from the sporidia penetrate the epidermis of the glumes through the stomata and enter the developing wheat karnal. The fungus eventually ruptures the pericarp, producing large numbers of teliospores within infected karnals.

## Temperature requirement:

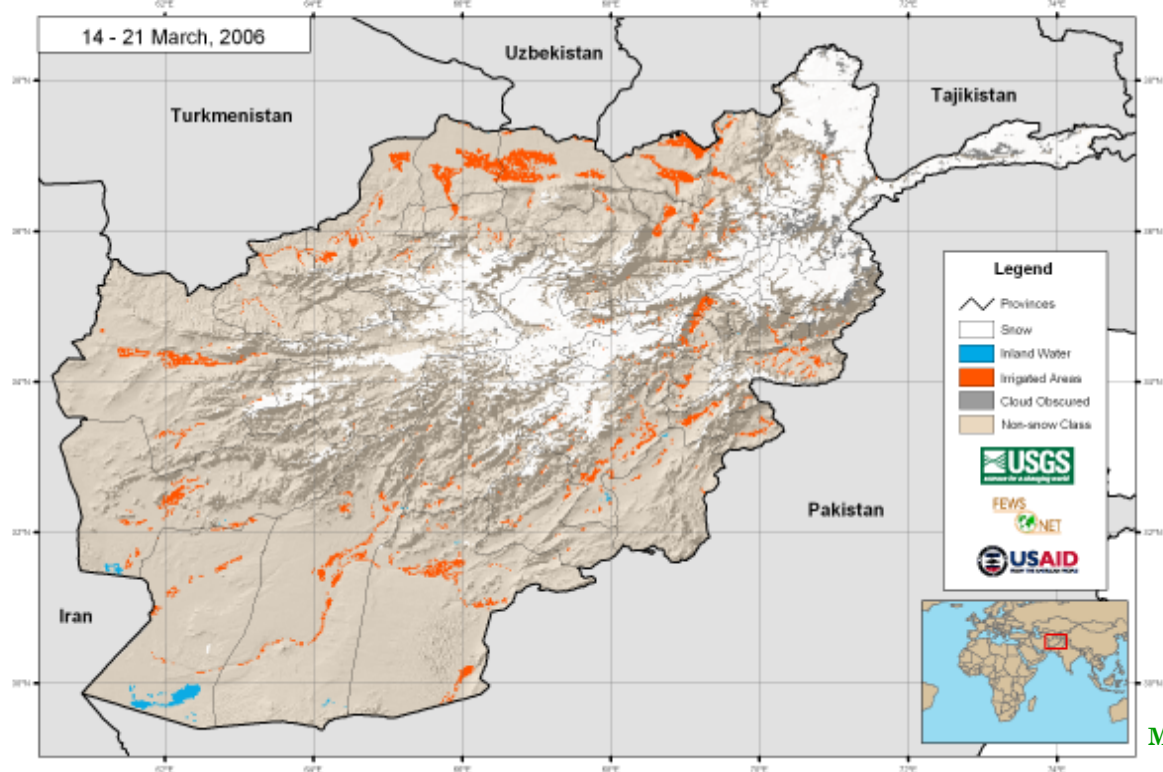
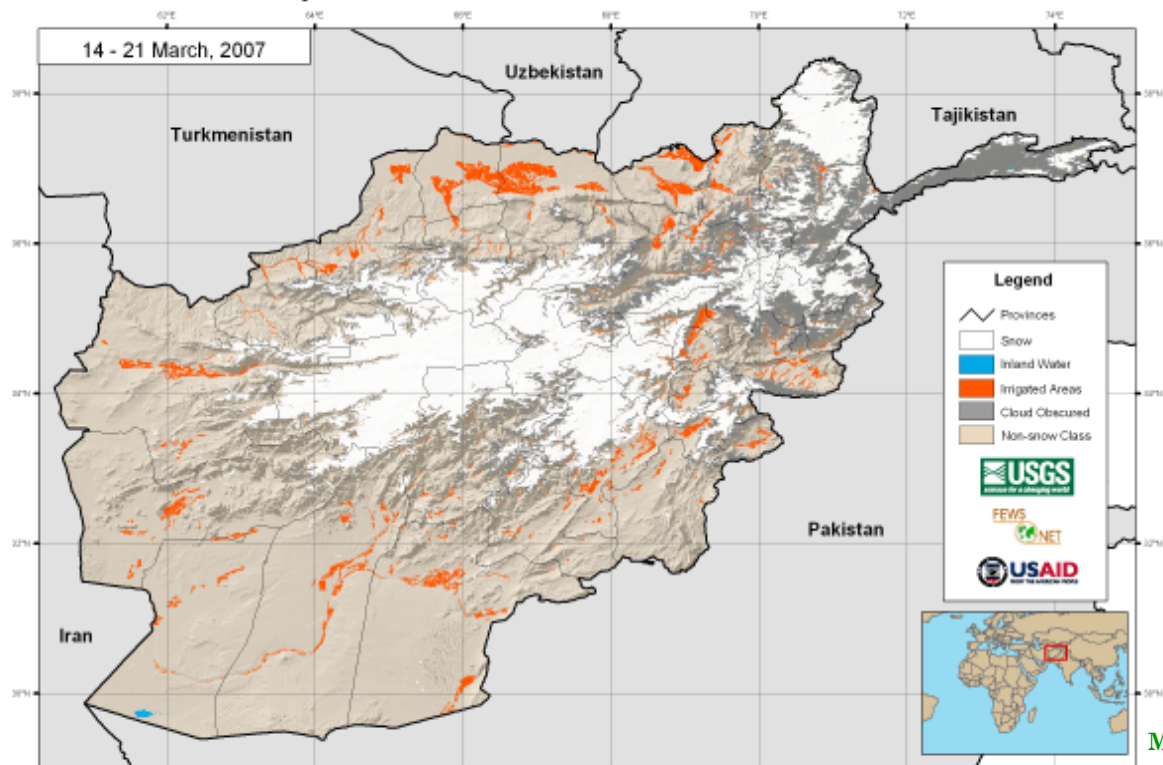
Karnal Bunt outbreaks are generally associated with average air temperatures ranging from 9.4-23.9 °C and optimal soil temperatures of between 17 and 21 °C. Favorable conditions for diseases development include cool, rainy weather or regular irrigation and high humidity at the time of heading. The severity of the diseases can also increase when favorable temperatures occur during ear emergence. Irrigation contributes by increasing relative humidity levels.



Loose smut on wheat causes plant to head early.  
Courtesy Harold Kaufman, TAEX, 1996.

## Comparison of Snow Extent

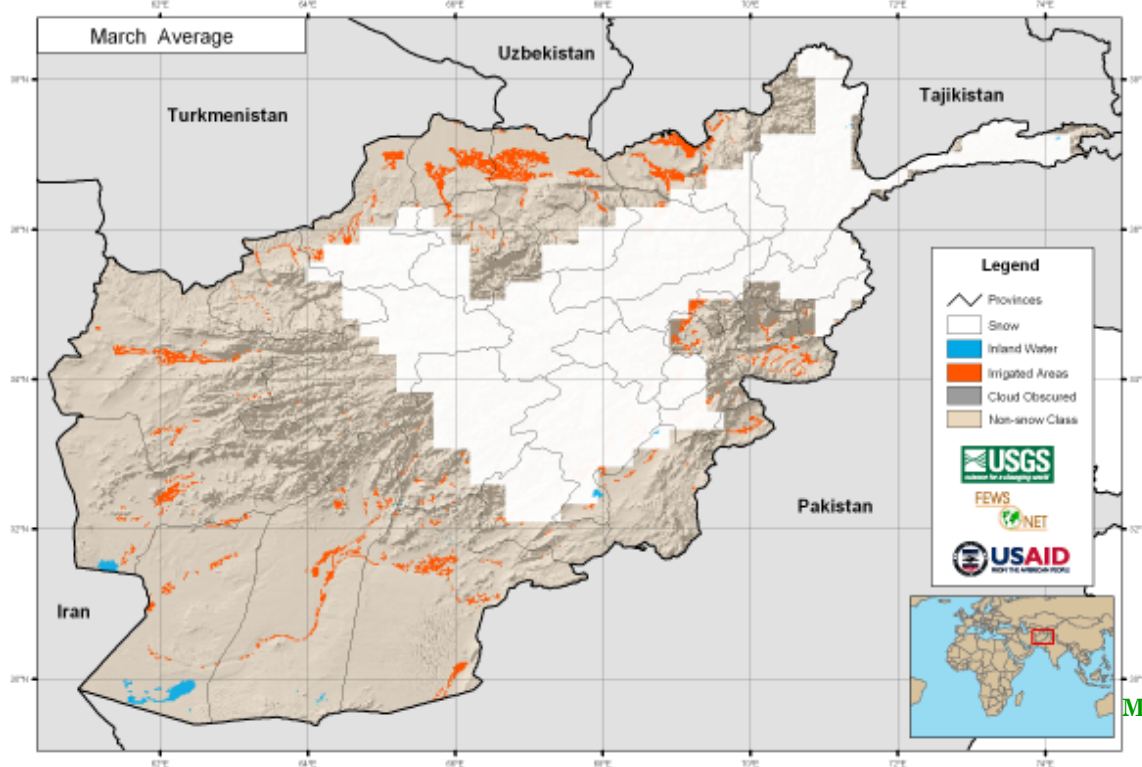
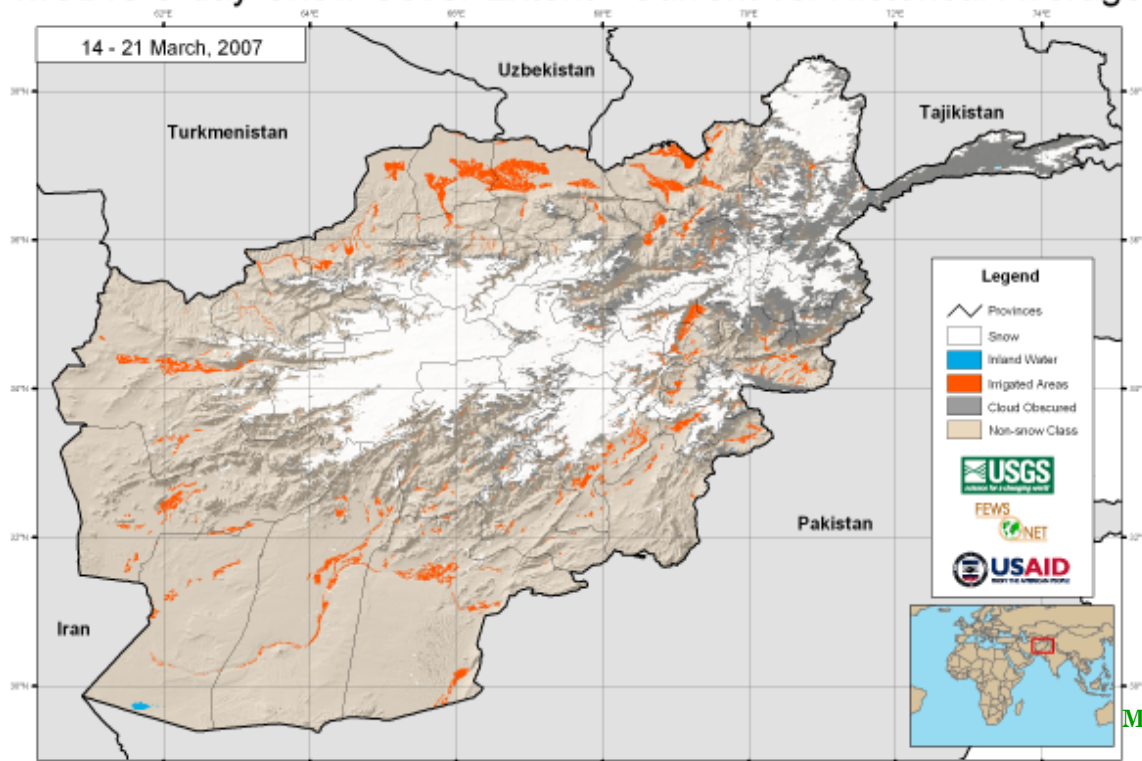
### MODIS 8-day Snow Cover Extent - Current Period 2007 vs 2006



Comparison of snow extent for the period (14 – 21) March 2007 with the same period in 2006 (maps 11 and 12) shows an increase of snow extent in the snow covered areas, particularly in the Central Highlands and the neighboring areas.

## Comparison of Snow Extent

### MODIS 8-day Snow Cover Extent - Current vs. Historical Average



Comparison of snow extent for the month of March 2007 with the same month of long term average (maps 13 and 14) shows decrease of snow extent during the month of March 2007 over the same month of long term average in most parts of the snow covered areas.



## Flood

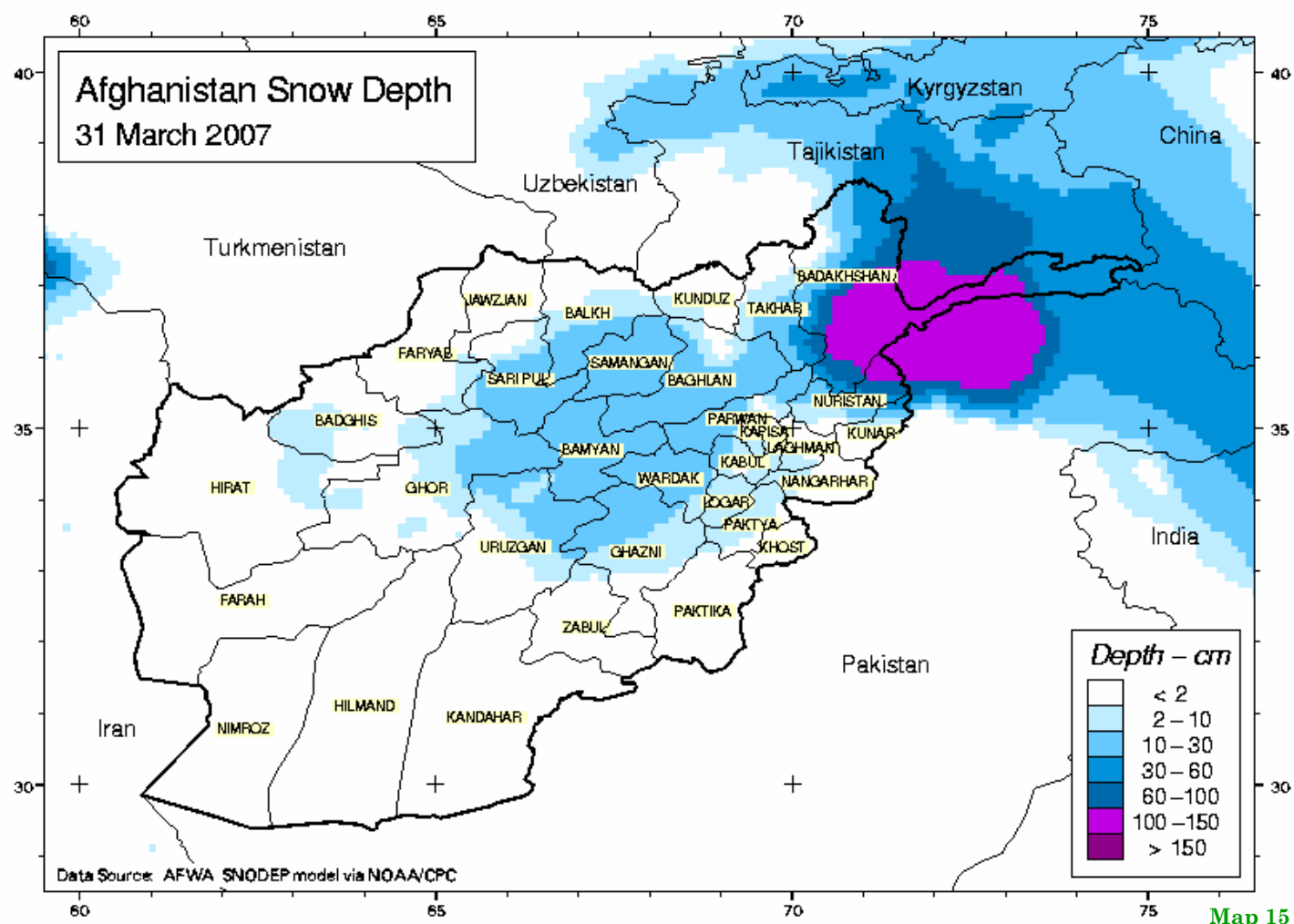
In the month of March 2007 due to heavy rainfall and increase of temperature which accelerated the snow melting in several provinces heavy floods occurred. The people and agricultural lands have been suffered greatly and resulted in more casualties shown as following:

No	Province	Type of Disaster	Casualties			Affected Families	Affected Houses		Fruit Trees	livestock	Affected Areas	
			killed	Injured	missed		Destroyed	Damaged			Agr. Lands in Jirebs	Other
1	Urazgan	Flood	3				700	155		2080	20500	
2	Nemroz	Flood	5								2000	12 Water Pumps
3	Faryab	Flood	2							221	300	1 Check Dam
4	Badghis	Flood	5					805	1020	1000	150	
5	Sari Pul	Flood						212		22	420	13 Bridges, 170 Check dams
6	Ghor	Snow Sliding	12	13								
7	Bamyan	Flood							650			
		Snow sliding	10				53				539	
8	Herat	Flood									450	
9	Panjsher	Snow Sliding	1								40	1 Mosque
10	Parwan	Flood		1		539			650000	5	2080	1 Check Dam
11	Maidan Wardak	Flood									2596	19 Bridges,
12	Laghman	Flood					150				1000	
13	Logar	Flood				1831			1900	4	8608	
<b>Total</b>			<b>38</b>	<b>14</b>		<b>2370</b>	<b>903</b>	<b>1172</b>	<b>653570</b>	<b>3332</b>	<b>38683</b>	





## Afghanistan Snow Depth March 2007



Map 15

Map15 shows the snow depth for the country where the snow depth has been recorded from 30 up to 60 cm in the Northeastern region and 10 – 30 cm for the Central Highlands and neighboring areas.

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<http://www.agriculture.gov.af/farsi/weather.htm>

<http://afghanistan.cr.usgs.gov/agro.asp>